

REMARKS

Claims 1-44 are pending in the present application.

Reconsideration on the merits is respectfully requested.

The claims are believed to be allowable for the reasons set forth herein. Notice thereof is respectfully requested.

Information Disclosure Statement

A review of the file indicates that the Information Disclosure Statement as submitted was proper and complete. In an effort to advance the instant application the Information Disclosure Statement is resubmitted. In addition to the previous documents a translation of JP 08-114897 is provided.

Claim Objections

Claim 2 is objected to because of formalities. The objection has been rendered moot by amendment.

Claim Rejections - 35 USC § 103

Claims 1-5, 11, 13, 15, 17, 19, 21, 23, 25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kano (U.S. Pat. No. 5,012,107) in view of Tsuchiya (JP 408114897).

Kano et al. is cited as disclosing a stimuable phosphor screen or panel comprising a phosphor layer and a support with an intermediate layer arrangement. The intermediate layer arrangement comprises a light shielding layer and, further from the support, a stimulated light reflecting layer. The Office has noticed that Kano does not specify that the light-shielding layer is an X-ray absorbing foil. The Office fails to notice that Kano specifically describes the light-shielding layer as absorbing or reflecting stimulating light (col. 5, lines 51-54).

Kano et al. is specific to a storage panel wherein x-radiation is captured and stored until release. The release is accomplished by radiating the panel with stimulating light having a wavelength of 500-900 nm which causes stimulated light to be emitted. Both of the layers of Kano et al. function during the excitation and release of stored radiation with no mention of the function of any layers during x-radiation storage.

The presently claimed invention is specific to the combination of a reflecting foil for stimulated light and an x-ray absorbing foil. These function independently. The x-ray absorbing foil impacts the manner in which the x-radiation is stored. After the x-radiation is stored in the phosphor a

subsequent exposure by stimulating light causes the stimulated light to be released.

Tsuchiya is cited as disclosing an x-ray detection device with a lead foil. The Office opines that one of ordinary skill in the art would be motivated to use the lead foil disclosed in Tsuchiya with the invention of Kano in order to reduce scattering and increase detection efficiency. Applicants respectfully submit that there is no motivation for such a combination except that provided by hindsight.

Tsuchiya is specific to a direct phosphor wherein the x-radiation is emitted as lower wavelength radiation immediately. There is no energy storage, no stimulating light and no stimulated light as described in Kano et al. Tsuchiya provides no context within which one of skill in the art could determine how the property of the foil could alter the absorption of stimulating light and emission of stimulated light since neither of these are present in Tsuchiya.

Kano et al. provides no context regarding how altering the properties of the x-ray absorption would impact the image quality associated with the image retrieval step.

Absent the present disclosure one of skill in the art would have no motivation for combining a layer from a direct phosphor screen for use in a storage phosphor. One would have even less

motivation for replacing a light absorbing layer with an x-ray absorbing layer since the image quality associated with stimulating and capturing stored energy would be compromised.

The rejection of Claims 1-5, 11, 13, 15, 17, 19, 21, 23, 25 and 27 under 35 U.S.C. 103(a) as being unpatentable over Kano in view of Tsuchiya is improperly based on a hindsight reconstruction. Motivation for the hindsight reconstruction is only provided in the present application. The teachings of the cited references are mutually exclusive in that one is specific to x-ray absorption and direct conversion to lower wavelength light whereas the other is specific to techniques for extracting stored radiation from a storage panel. The rejection is traversed.

Claims 6, 7-10, 12, 14, 16, 18, 20, 22, 24, 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kano in view of Tsuchiya and further in view of Silversher (U.S. Pat. No. 2,928,948).

Kano and Tsuchiya are addressed previously and all prior comments are relevant herein as well. In summary, one of skill in the art would have no motivation, except hindsight reconstruction, for combining the teachings as suggested by the Office.

In addition to the lack of motivation Kano and Tsuchiya are stated by the Office to lack teachings directed to a light-reflecting layer made of aluminum. Silversher is cited as disclosing those teachings which are otherwise lacking.

Silversher is specific to a laminar device for shielding against the transmission of alpha, beta, gamma and neutron transmissions. Silversher teaches the use of an aluminum layer to absorb the secondary radiation from lead after absorption of alpha, beta, gamma and neutron radiation.

One of skill in the art would have no motivation for including a layer suitable for absorbing secondary radiation emitted as a result of lead absorbing alpha, beta, gamma and neutron transmissions when there is absolutely no teaching or suggestion of the lead absorbing such materials in the x-ray storage screen. This combination can only be made in hindsight based on the teachings of the present invention.

The rejection of claims 6, 7-10, 12, 14, 16, 18, 20, 22, 24, 26 and 28 under 35 U.S.C. 103(a) as being unpatentable over Kano in view of Tsuchiya and further in view of Silversher is improperly based on a combination of references which can only be made in hindsight based on a requirement which does not exist. The rejection is traversed.

Claims 29, 31, 33, 35, 37, 39, 41 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kano in view of Tsuchiya and further in view of Homme (U.S. Pre Grant Publication 2004/0000644).

Kano and Tsuchiya are addressed previously and all prior comments are relevant herein as well. In summary, one of skill in the art would have no motivation, except hindsight reconstruction, for combining the teachings as suggested by the Office.

As pointed out by the Office, Kano and Tsuchiya fail to disclose a binderless phosphor having needle shaped crystals. Homme is cited as disclosing those teachings which are otherwise lacking in the primary references.

Homme is specific to a scintillator panel which absorbs x-radiation and converts the x-radiation to an electrical signal. There is no direct conversion to light, as in Tsuchiya, nor is there an energy stored which is later converted to light, as in Kano. With the scintillator panel of Homme the critical step is accurate conversion of absorbed light to a discrete electrical signal. In contrast, Kano attempts to control the stimulating light and stimulated light for accurate conversion of stored energy to stimulated light and ultimately to capture of the stimulated light. Kano does not have a direct conversion to

electrical energy and Homme does not have a stored light released by stimulating light. One of skill in the art would have no motivation for consulting Homme for teachings related to accurately applying stimulating light and releasing stimulated light.

The Office opines that one of skill in the art would utilize the crystals of Homme in the invention of Kano in order to reduce lateral spreading of the detected radiation. This opinion can only be made in hindsight. Homme is attempting to isolate discrete areas for better interface with electrical detectors. Kano does not have such a problem and, instead, attempts to control the stimulating light beam and stimulated light beam. One of skill in the art attempting to control stimulated and stimulating light would have no motivation to consider a device which converts the absorbed energy to electrical signals.

Even if one did combine Homme and Kano they would be led away from the incorporation of metal layers as taught in Tsuchino. As set forth in paragraph [0008] of Homme metal films react with scintillators resulting in corrosion. One of skill in the art would have no motivation for combining Kano and Homme and if they did, based on hindsight, they would not include the teachings of Tsuchiyo due to the expectation of corrosion.

The rejection of claims 29, 31, 33, 35, 37, 39, 41 and 43 under 35 U.S.C. 103(a) as being unpatentable over Kano in view of Tsuchiya and further in view of Homme is improperly based on a hindsight reconstruction. Even if such a construction were attempted the expectation would be corrosion leading to an undesirable result. The rejection is improper and traversed.

Claims 30, 32, 34, 36, 38, 40, 42 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kano in view of Tsuchiya further in view of Silversher and further in view of Homme.

Each reference has been discussed previously herein and previous comments are equally applicable in response to this rejection.

In summary, Kano is directed to a storage phosphor wherein x-radiation is stored and released as stimulated light after exposure to stimulating light. To improve the resolution of the recorded image the stimulated light and stimulating light are selectively treated by various layers.

Tsuchiyo is specific to a direct phosphor. To improve the resolution the x-radiation beam is treated. Kano and Tsuchiyo are mutually exclusive with regards to the type of radiation being altered and the reasons.

Silversher is specific to a laminated structure suitable for absorbing alpha, beta, gamma and neutron radiation. Aluminum is described as suitable for absorbing secondary radiation emitted by lead after absorption of this radiation. There is no motivation for considering the teachings of Silversher since none of the references with which it is combined are related to shielding fissionable materials and the secondary radiation created thereby is of no concern.

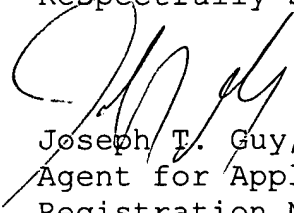
Homme is specific to a scintillator which converts x-radiation to electrical signals. One of skill in the art would not consult Homme for teachings related to improving the stimulating and stimulated light from a storage phosphor as taught in Kano. Even if one did consider Homme they would be motivated to avoid incorporating the metal layers of Tsuchiyo due to the expectation of corrosion.

The rejection of claims 30, 32, 34, 36, 38, 40, 42 and 44 under 35 U.S.C. 103(a) as being unpatentable over Kano in view of Tsuchiya further in view of Silversher and further in view of Homme is improper for at least the reasons set forth herein. The rejection is traversed.

CONCLUSIONS

Claims 1-44 are pending in the present application. All claims are believed to be in condition for allowance. Notice thereof is respectfully requested.

Respectfully submitted,



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